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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

SCHECHTER, ANDREW M

ART UNIT

PAPER NUMBER

2871

DATE MAILED: 05/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/853,642

Applicant(s)

SONG ET AL.

Examiner

Andrew Schechter

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 15 April 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
- 4a) Of the above claim(s) 7-13 and 20-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5, 6, 15-17 and 19 is/are rejected.
- 7) ☒ Claim(s) 4, 14 and 18 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☒ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Oath/Declaration

1. The oath or declaration is defective. A new oath or declaration in compliance with 37 CFR 1.67(a) identifying this application by application number and filing date is required. See MPEP §§ 602.01 and 602.02.

The oath or declaration is defective because: the post office addresses for both inventors are missing.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

3. The abstract of the disclosure is objected to because it is longer than 150 words. Correction is required. See MPEP § 608.01(b).

Claim Objections

4. Claims 4 and 18 are objected to because of the following informalities: claim 4 recites "the neighboring separate portions of the black matrix" which are not recited in claims 1 or 2; it is assumed that claim 4 is meant to depend on claim 3, rather than on claim 2. Similarly, claim 18 is assumed to depend on claim 17, rather than claim 16. Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 5, and 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Han et al.*, U.S. Patent No. 5,926,235 in view of *Yanagisawa*, U.S. Patent No. 5,128,786.

Han discloses [see Fig. 6, for instance] a liquid crystal display comprising a first insulating substrate [110], a gate line assembly [107] with gate lines and gate electrodes [see Fig. 4, 107 and 117], a gate insulating pattern [109], a semiconductor pattern [111], an ohmic contact layer [112], a data line assembly with source and drain electrodes [105 and 106] and data lines [115], and a protective layer [113a] covering the data line and gate line assemblies while exposing the gate insulating pattern, the semiconductor pattern, and the substrate below the gate insulating pattern (where the insulating layer is located in the claimed invention) at the pixel areas [compare Figs 6a and 6b with the application's Fig. 2].

Han does not disclose a black matrix formed on the substrate, mesh-shaped with opening portions at pixel areas, and an insulating layer on and covering the black matrix and substrate. *Yanagisawa* does disclose a black matrix [16] formed on an analogous substrate for an analogous device, mesh-shaped with openings at the pixel areas, and an insulating layer [17] on and covering the black matrix and substrate. The rest of the

structure (electrodes, alignment layer, etc.) is then layered on top of the insulating layer. Note that although the figures in *Yanagisawa* depict a passive matrix LCD with simple lines of electrodes, *Yanagisawa* explicitly says that its invention (the black matrix in discontinuous portions, separated from the electrodes above by an insulating layer) “can also be applied to the liquid crystal display devices of the TFT active matrix type” [col. 8, lines 20-26]. It would therefore be obvious to one of ordinary skill in the art to form the black matrix and insulating layer of *Yanagisawa* under the gate electrode structure of *Han*, motivated by *Yanagisawa*’s teachings that the use of a black matrix prevents light from “leaking through the net-like area ... between the image elements” [col. 1, lines 14-23] so a black matrix is beneficial, and that the use of this particular black matrix (discontinuous, with various portions) reduces display defects which would otherwise be caused by short-circuits between the black matrix and the other electrodes [col. 2, lines 42-49]. Claim 1 is therefore unpatentable, as is claim 15 which recites the method of forming the device of claim 1.

Han also discloses a pixel electrode [104] connected to the drain electrode, the contact made through a contact hole [116] in the passivation layer. Claims 2 and 16 are therefore also unpatentable.

Yanagisawa’s black matrix [see Figs. 4, 6-9] is separated into a plurality of portions, so claims 3 and 17 are also unpatentable. Considering the arrangement of the black matrix in Fig. 7 applied to an active matrix device, there are first portions over gate lines, second portions over data lines, and these are separated from each other, so claim 5 is also unpatentable.

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7. Claims 6 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Han* in view of *Yanagisawa* as applied to claims 1-3, 5, and 15-17 above, and further in view of *Murade*, U.S. Patent No. 6,297,862.

The additional limitation is that the pixel electrode overlaps the black matrix. *Han* does not disclose a black matrix. *Yanagisawa* discloses a black matrix [see Figs. 6-9] which overlaps its transparent display electrodes (where the pixel electrode would be in an active matrix device), but does not explicitly disclose a pixel electrode or give a teaching explaining why it is beneficial to have the black matrix and the transparent display electrodes overlap as they are depicted doing.

Murade discloses an active matrix LCD with a pixel electrode [14] and a black matrix [7] on the substrate, separated from the other electrodes by an insulating layer [11], analogous to both *Yanagisawa* and the present invention. (The black matrix in *Murade* is also divided into portions.) *Murade* discloses that the black matrix overlaps the pixel electrode [col. 14, lines 66-67] and teaches that this arrangement dispenses with the need for precise alignment of a black matrix on the opposite substrate, and the thus obtained liquid crystal devices show little variation in light transmittance [col. 14, line 47 – col. 15, line 17]. It would therefore be obvious to one of ordinary skill in the art to overlap the pixel electrode and the black matrix, motivated by the example and teaching of *Murade*. Claims 6 and 19 are therefore unpatentable.

Allowable Subject Matter

8. Claims 4, 14, and 18 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

9. The following is a statement of reasons for the indication of allowable subject matter:

The prior art does not disclose or fairly suggest (in combination with the other claimed elements) the additional limitation of having buffer layers placed at the same plane as the gate lines or data lines, positioned between neighboring separate portions of the black matrix. Claims 4 and 18 would therefore be allowable if rewritten appropriately. (Note also the objection above to claims 4 and 18 regarding their dependency.)

The prior art also does not disclose or fairly suggest (in combination with the other claimed elements) the additional limitation of a common electrode on the second substrate having opening portions over the semiconductor pattern between the neighboring data lines, so claim 14 would be allowable if rewritten appropriately.

Election/Restrictions

10. Applicant's election without traverse of Group I, claims 3-6 and 17-19, in Paper No. 8 is acknowledged. The examiner notes that claim 14 was omitted from the listing of claims in the previous action; it is considered a generic claim along with 1, 2, 15, and 16.

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11. Claims 7-13 and 20-25 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made without traverse in Paper No. 8.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew Schechter whose telephone number is (703) 306-5801. The examiner can normally be reached on Monday - Friday, 9:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert H. Kim can be reached on (703) 305-3492. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 746-4711 for regular communications and (703) 746-4711 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.


Andrew Schechter
April 30, 2003


TOANTON
PRIMARY EXAMINER